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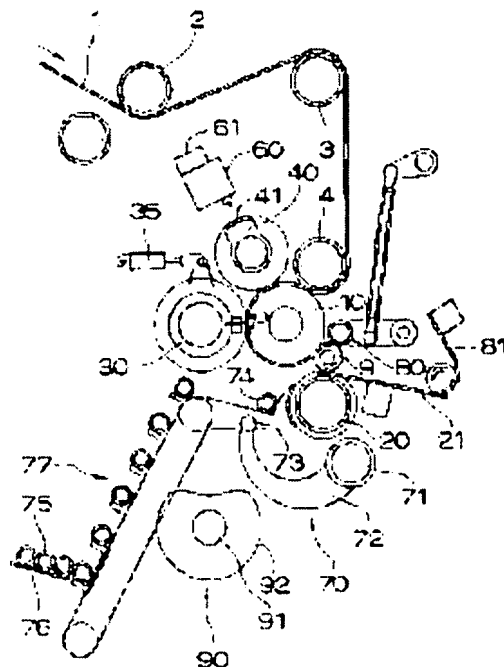
SUZUKI HITOSHI

(54) WEB TAKE-UP DEVICE

(57)Abstract:

PURPOSE: To provide a web take-up device capable of minimizing influence of an adhesive so as to continuously take up a web with less wrinkle from the start to the end even if the web has little elongation (for example, copy paper or wall paper).

CONSTITUTION: An adhesion means to apply an adhesive on a travelling web 1 in a direction orthogonal with the travelling direction of the web 1 consists of an adhesive transfer roller 40 free to rotate and arranged so as to sandwich the web 1 between itself and a first take-up drum 10 at a position in the neighbourhood of a groove 11 formed on the surface of the first take-up drum 10, a transfer means to transfer the adhesive transfer roller 40 in the shaft direction and a plural number of adhesive injection devices 60 arranged with proper intervals along the longitudinal direction of the adhesive transfer roller 40.



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TECHNICAL FIELD

[Industrial Application] This invention relates to a web take-up motion. It is related with the web take-up motion which rewinds paper from a still more detailed comparatively large-sized parent roll sheet, and is used for a ***** case by two or more comparatively small rolls for consumers. In addition, there is a roll volume without crepes, such as paper (paper with much elongation) crepes, such as toilet paper marketed, a tissue paper, and a towel paper, are one of typical things of the roll for consumers, and a copy paper, wallpaper, (paper with little elongation) etc.

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PRIOR ART

[Description of the Prior Art] In the conventional web take-up motion, adhesion to the winding core of a web point and fixing to the volume going-up roll of web **** were performed by the following approaches. Namely, when pasting up the point of a web on a winding core, adhesives were applied in the shape of a ring on the surface of the winding core, and the web point was stuck on the winding core at the time of rolling-up initiation of a roll. Moreover, when fixing **** of the web cut in connection with volume going up of a roll on a volume going-up roll, direct adhesives were applied to the web along the transit direction of a web, and web **** was stuck on the volume going-up roll, and it had fixed.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the adhesives method of application in said conventional web take-up motion, in order to apply adhesives in the shape of a ring on the surface of a winding core or to apply them along the transit direction of a web, adhesives spreading area becomes large beyond the need, and there is a problem that the amount of the adhesives used increases. Moreover, in spite of having used many adhesives in this way, it is generated also when adhesion is not enough. Since adhesives are not applied covering full [of a web] especially when applying direct adhesives to a web along the transit direction of a web, a broad roll volume product is not enough as fixing to the volume going-up roll of web ****, and the front face of a volume going-up roll is not finished beautifully, but there is a problem that commodity value falls. Furthermore, the amount of the paper which can be used since apply adhesives in the shape of a ring on the surface of a winding core, or the web of the part to which many adhesives will be applied to beyond the need and adhesives were applied will deteriorate when applying direct adhesives to a web along the transit direction of a web, or a wrinkle will be made decreases. For this reason, for the high product of the added value of the copy paper which must be able to be used with one volume going-up roll, wallpaper, etc., the conventional adhesion approach is not economical.

[0004] even if it be a web with little elongation (for example , a copy paper , wallpaper , etc.) , this invention aim at offer the web take-up motion in which the adhesion means which can make effect of adhesives the minimum so that there may be no wrinkle and it can roll round continuously from the beginning to the last be formed , while it decrease the amount of the adhesives used , when roll round the web it run comparatively continuously at high speed to a winding core in view of this situation .

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MEANS

[Means for Solving the Problem] The 1st rolling-up drum, the 2nd rolling-up drum, and web separation roll which the web take-up motion of this invention synchronizes, and rotate, The winding core insertion means for inserting a winding core between said 1st rolling-up drums and 2nd rolling-up drums, It is the web take-up motion equipped with the diameter control roll which rolls round a web with said 1st rolling-up drum and the 2nd rolling-up drum. The adhesion means for applying adhesives to the web it runs in the transit direction and the direction of a right angle of this web The pivotable adhesives transfer roller arranged so that a web may be inserted between the 1st rolling-up drums in the location near the slot formed in the front face of said 1st rolling-up drum, It is characterized by consisting of a migration means to move this adhesives transfer roller to shaft orientations, and two or more adhesives fuel injection equipments which set suitable spacing, are arranged along with the longitudinal direction of said adhesives transfer roller, and inject adhesives on the front face of an adhesives transfer roller.

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EFFECT OF THE INVENTION

[Effect of the Invention] While applying only necessary minimum adhesives can decrease the amount of the adhesives used in this invention for a ***** reason, since there is no wrinkle, and it can roll round continuously and can be used from the beginning of a rolling-up roll to the last, it is economical. Moreover, since fixing to the rolling-up roll of web **** can paste up thoroughly throughout the cross direction, it does not become poor pasting up the ends of **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

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OPERATION

[Function] In the web take-up motion of this invention, since an adhesives transfer roller moves to the shaft orientations to the adhesives fuel injection equipment which injects adhesives, adhesives can be applied to the front face of an adhesives transfer roller along with the longitudinal direction. And since the adhesives applied to the adhesives transfer roller front face are imprinted by revolution of an adhesives transfer roller at the web under transit the 1st rolling-up drum lifting, they can apply adhesives covering the web full of the transit direction of a web, and the direction of a right angle. For this reason, since unnecessary adhesives can be decreased and only necessary minimum adhesives are applied to the web point and web **** after web separation compared with the conventional adhesion approach, and there is no wrinkle and it can be continuously used from the beginning of a rolling-up roll to the last, it is economical. Moreover, since fixing to the rolling-up roll of web **** can paste up thoroughly throughout the cross direction, it does not become poor pasting up **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the side elevation having shown the outline of the web take-up motion in connection with one example of this invention.

[Drawing 2] (A) is the top view of the circumference of an adhesives transfer roller, and (B) is the sectional view of the body of an adhesives transfer roller.

[Drawing 3] It is the top view having shown the outline of the control unit used with the web take-up motion of this invention.

[Drawing 4] It is the important section enlarged drawing of the web take-up motion shown in drawing 1.

[Drawing 5] It is an explanatory view in the condition of having applied one train of adhesives to the adhesives transfer roller.

[Drawing 6] It is an explanatory view in the condition of imprinting adhesives from an adhesives transfer roller to a web.

[Drawing 7] It is an explanatory view in the condition that a web eliminator cuts the web which carried out imprint spreading of the adhesives.

[Drawing 8] It is the explanatory view of the rolling-up condition of the web which applied one train of adhesives.

[Drawing 9] It is an explanatory view in the condition of having applied two trains of adhesives to the adhesives transfer roller.

[Drawing 10] It is the explanatory view of the rolling-up condition of the web which applied two trains of adhesives.

[Description of Notations]

1 Web 1a Web ****

1b Web point 7 Adhesives

8 Adhesives 10 1st Rolling-Up Drum

11 Slot 20 2nd Rolling-Up Drum

30 Web Separation Roll 31 Web Eliminator

40 Adhesives Transfer Roller 50 Cylinder

60 Adhesives Fuel Injection Equipment 62 Nozzle

63 Nozzle 70 Winding Core Insertion Means

74 Winding Core 80 Diameter Control Roll

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to a web take-up motion. It is related with the web take-up motion which rewinds paper from a still more detailed comparatively large-sized parent roll sheet, and is used for a ***** case by two or more comparatively small rolls for consumers. In addition, it is [0002] with a roll volume without crepes, such as paper (paper with much elongation) crepes, such as toilet paper marketed, a tissue paper, and a towel paper, are one of typical things of the roll for consumers, and a copy paper, wallpaper, (paper with little elongation) etc.

[Description of the Prior Art] In the conventional web take-up motion, adhesion to the winding core of a web point and fixing to the volume going-up roll of web **** were performed by the following approaches. Namely, when pasting up the point of a web on a winding core, adhesives were applied in the shape of a ring on the surface of the winding core, and the web point was stuck on the winding core at the time of rolling-up initiation of a roll. Moreover, when fixing **** of the web cut in connection with volume going up of a roll on a volume going-up roll, direct adhesives were applied to the web along the transit direction of a web, and web **** was stuck on the volume going-up roll, and it had fixed.

[0003]

[Problem(s) to be Solved by the Invention] However, in the adhesives method of application in said conventional web take-up motion, in order to apply adhesives in the shape of a ring on the surface of a winding core or to apply them along the transit direction of a web, adhesives spreading area becomes large beyond the need, and there is a problem that the amount of the adhesives used increases. Moreover, in spite of having used many adhesives in this way, it is generated also when adhesion is not enough. Since adhesives are not applied covering full [of a web] especially when applying direct adhesives to a web along the transit direction of a web, a broad roll volume product is not enough as fixing to the volume going-up roll of web ****, and the front face of a volume going-up roll is not finished beautifully, but there is a problem that commodity value falls. Furthermore, the amount of the paper which can be used since apply adhesives in the shape of a ring on the surface of a winding core, or the web of the part to which many adhesives will be applied to beyond the need and adhesives were applied will deteriorate when applying direct adhesives to a web along the transit direction of a web, or a wrinkle will be made decreases. For this reason, for the high product of the added value of the copy paper which must be able to be used with one volume going-up roll, wallpaper, etc., the conventional adhesion approach is not economical.

[0004] even if it be a web with little elongation (for example , a copy paper , wallpaper , etc.) , this invention aim at offer the web take-up motion in which the adhesion means which can make effect of adhesives the minimum so that there may be no wrinkle and it can roll round continuously from the beginning to the last be formed , while it decrease the amount of the adhesives used , when roll round the web it run comparatively continuously at high speed to a winding core in view of this situation .

[0005]

[Means for Solving the Problem] The 1st rolling-up drum, the 2nd rolling-up drum, and web separation roll which the web take-up motion of this invention synchronizes, and rotate, The winding core insertion means for inserting a winding core between said 1st rolling-up drums and 2nd rolling-up drums, It is the web take-up motion equipped with the diameter control roll which rolls round a web with said 1st rolling-up drum and the 2nd rolling-up drum. The adhesion means for applying adhesives to the web it runs in the transit direction and the direction of a right angle of this web The pivotable adhesives transfer roller arranged so that a web may be inserted between the 1st rolling-up drums in the location near the slot formed in the front face of said 1st rolling-up drum, It is characterized by consisting of a migration means to move this adhesives transfer roller to shaft orientations, and two or more adhesives fuel injection equipments which set suitable spacing, are arranged along with the longitudinal direction of said adhesives transfer roller, and inject adhesives on the front face of an adhesives transfer roller.

[0006]

[Function] In the web take-up motion of this invention, since an adhesives transfer roller moves to the shaft orientations to the adhesives fuel injection equipment which injects adhesives, adhesives can be applied to the front face of an adhesives transfer roller along with the longitudinal direction. And since the adhesives applied to the adhesives transfer roller front face are imprinted by revolution of an adhesives transfer roller at the web under transit the 1st rolling-up drum lifting, they can apply adhesives covering the web full of the transit direction of a web, and the direction of a right angle. For this reason, since unnecessary adhesives can be decreased and only necessary minimum adhesives are applied to the web point and web **** after web separation compared with the conventional adhesion approach, and there is no wrinkle and it can be continuously used from the beginning of a rolling-up roll to the last, it is economical. Moreover, since fixing to the rolling-up roll of web **** can paste up thoroughly throughout the cross direction, it does not become poor pasting up **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

[0007]

[Example] Below, the example of this invention is explained based on a drawing. Drawing 1 shows the web take-up motion which is one example of this invention. This web take-up motion consists of the 1st rolling-up drum 10, the 2nd rolling-up drum 20, the web separation roll 30, the adhesives transfer roller 40, the adhesives fuel injection equipment 60, a winding core insertion means 70, a diameter control roll 80, and a control means 90 roughly.

[0008] As shown in the enlarged drawing of drawing 4, a slot 11 is constituted along with the longitudinal direction of the 1st rolling-up drum 10 by the front face of said 1st rolling-up drum 10, and inside the slot 11, the hook 12 for holding **** of the cut web 1 on the front face of the 1st rolling-up drum 10 is formed in it (indicated by Japanese Patent Application No. No. 305311 [three to] about the slot 11 and the detail of hook 12). In addition, maintenance of **** can adopt the means of arbitration for the approach of holding **** of the web 1 cut with the attraction hole formed in the front face of the 1st rolling-up drum 10 on the front face of the 1st rolling-up drum 10 etc. Moreover, the attraction hole 13 for holding the point of a web 1 cut from said slot 11 to the backside [the hand of cut] of the 1st rolling-up drum 10 on the front face of the 1st rolling-up drum 10 is formed in the front face of the 1st rolling-up drum 10, and this attraction hole 13 is open for free passage in the vacuum box 14. The 2nd rolling-up drum 20 shown in drawing 1 is a drum for rotating synchronizing with the 1st rolling-up drum 10, and rolling round a web 1 with this 1st rolling-up drum 10.

[0009] As shown in drawing 4, the web eliminator 31 which has a **** member along the direction of a normal of the web separation roll 30 is attached in the front face of the web separation roll 30, and in order to prevent a gap of a web 1 on both sides of this web eliminator 31, the elastic body 32 is attached. In addition, this elastic body 32 is formed with the good ingredient of detachability, for example, silicone rubber etc., in order to avoid adhesion with the adhesives mentioned later. This web separation roll 30 is supported by the arm 33 pivotable, and is connected with the gear train which is not illustrated so that it may rotate synchronizing with said 1st rolling-up drum 10. Moreover, between the web separation roll 30 and a frame (graphic display abbreviation), cylinders 35 are pins 34 and 36. It is connected and this cylinder 35 constitutes the web separation roll 30 possible [press] in the 1st rolling-

up drum 10 side.

[0010] If the point of the web eliminator 31 is pushed in in a slot 11 when the point of said web eliminator 31 is in agreement with said slot 11 while said web separation roll 30 is carrying out the synchronous revolution with the 1st rolling-up drum 10, a web 1 will be torn and a web 1 will be divided into two. in addition, as a means to divide a web 1 into two The Annville knife is formed in this 1st rolling-up drum 10 hand-of-cut side face in the slot 11 formed in the front face of the 1st rolling-up drum 10 while forming a cutter knife in the web eliminator 31. When rushing in into the slot 11 where the web eliminator 31 was formed in the front face of the 1st rolling-up drum 10 The means of arbitration, such as the approach (patent application on December 14, Heisei 3 "the web cutting equipment in a web take-up motion") of contacting said cutter knife and said Annville knife, and carrying out share KATTEIGU of the web 1, is employable.

[0011] Said adhesives transfer roller 40 is formed so that adhesives may be applied over the longitudinal direction of the front face of this adhesives transfer roller 40. That is, as shown in drawing 2 (B), the convex height was formed in the longitudinal direction of a cylinder-like roll, and the good elastic body 41 of detachability has fixed in the front face of this convex height. And said adhesives transfer roller 40 is the bearing 42 and 49 fixed to the frames 5 and 6 installed in the shaft orientations and the right angle of the adhesives transfer roller 40 as shown in drawing 2 (A). And this bearing 42 and 49 It is supported by the supported ball bearings 45 and 48. Bearing 44 is inserted in inside said ball bearing 45, and it is one shaft 40a of this bearing 44 and the adhesives transfer roller 40. It is formed in the castellated shaft 43 in between. Moreover, bearing 47 is inserted in also inside a ball bearing 48, and it is one shaft 40b of this bearing 47 and the adhesives transfer roller 40. It is formed in the castellated shaft 46 in between. Although a ball spline etc. is used, for example and a revolution is transmitted as said castellated shafts 43 and 46, sliding of shaft orientations is possible.

[0012] On the other hand, a connecting shaft 55 is minded [of said bearing 47], and it is a driving gear 110. It is connected. Moreover, one shaft 40a of said adhesives transfer roller 40 A ball bearing 53 is installed in an axis end, and this ball bearing 53 is supported by the thrust carrier 52. It does not rotate, even if the adhesives transfer roller 40 rotates this thrust carrier 52, and the cylinder 50 supported by the base material 51 fixed to the frame 6 is connected with this thrust carrier 52. Therefore, if this cylinder 50 is made to expand and contract, the adhesives transfer roller 40 can be moved to shaft orientations. This cylinder 50 constitutes the migration means said to a claim.

[0013] Said adhesives fuel injection equipment 60 is supported by the adhesives fuel-injection-equipment base material 61, opens suitable spacing along with the longitudinal direction of the front face of said adhesives transfer roller 40, and is arranged two or more sets. For this reason, when said adhesives transfer roller 40 moves to the shaft orientations of this adhesives transfer roller 40, adhesives 7 can be applied to the front face of the adhesives transfer roller 40 continuously or intermittently. In this adhesives fuel injection equipment 60, it is a nozzle (a spray shall be included in the nozzle as used in this description). the following -- being the same -- one piece or the thing prepared two pieces is used, and with the adhesives fuel injection equipment 60 which prepared one nozzle, as shown in drawing 5 , adhesives can be applied to a single tier (7), and with the adhesives fuel injection equipment 60 which prepared two nozzles, as shown in drawing 9 , adhesives can be applied to two trains (7 8). In addition, what prepared two or more nozzles in each adhesives fuel injection equipment 60 at one train or two trains may be used. "Every one piece" said to a claim is a concept also including one train of two or more nozzles. Moreover, "every two pieces" is the concepts also containing what has arranged two trains of nozzle groups of each train some. Furthermore, if the constant-rate revolution of the adhesives transfer roller 40 is carried out and single-tier (8) spreading is already carried out after carrying out one train (7) spreading of the adhesives also with the equipment which prepared the nozzle in one train, the adhesives 7 and 8 of two trains can be obtained.

[0014] It is equipment for said winding core insertion means 70 to insert a winding core 74 between said 1st rolling-up drums 10 and said 2nd rolling-up drums 20, and an arm 72 is formed in the winding core insertion mechanism 71, and the insertion roller 73 is attached at the head of this arm 72. Moreover, cam follower 104 shown in the winding core insertion mechanism 71 at drawing 3 It is fixed, and to mention

later, directly in response to the fact that a motion of a cam 94, insertion actuation is controlled.

[0015] Said diameter control roll 80 is a roll for rolling round a web 1 with said 1st rolling-up drum 10 and the 2nd rolling-up drum 20, and rolling round until it becomes a desired volume going-up dimension, and pressing down the inner roll. Actuation of the diameter control roll 80 is controlled by the cam carried out one revolution, while rolling round one log with the servo motor (graphic display abbreviation) which rotates until the encoder signal which shows a real engine speed to the set-up volume die-length signal is in agreement, and this servo motor.

[0016] Said control means 90 is equipment which controls actuation of the 2nd rolling-up drum 20, the web separation roll 30, the adhesives transfer roller 40, the winding core insertion means 70, and the log brake 21. This control means 90 is a shaft 91, cams 92-96, and the adhesives transfer roller actuation gear 107-109, as shown in drawing 3. And driving gear 110, 111 It is constituted. Driving gear 111 Only the rotational frequency determined by relation with the 1st rolling-up drum 10 is this driving gear 111. It is a motor (or mechanical change gear style) for rotating the shaft 91 connected. Although the shaft 91 is set up in this example so that it may rotate one time by eight revolutions of the 1st rolling-up drum 10, this ratio can be set up freely. And the cam 96 for controlling the cam 94 and the log brake 21 for controlling the cam 93 for controlling the cams 92 and 95 for controlling the web separation roll 30 and the 2nd rolling-up drum 20 and the winding core insertion means 70 is being fixed to the shaft 91, and each cam is set up so that each equipment may work to each timing. moreover, a shaft 91 is supported on frames 5 and 6 -- having -- this shaft 91 -- the actuation gear 107, 109, and 108 it connects with the order -- having -- actuation gear 108 **** -- driving gear 110 It is connected. Driving gear 110 It is a device for driving the adhesives transfer roller 40 at the rate doubled with the 1st rolling-up drum 10. In addition, although here shows the control means by the mechanical approach, the control means by the electric approach of a motor etc. is also possible.

[0017] A winding core 75 is carried from the winding core alignment station 76 by the transporter 77 above. And the top winding core 74 stands by in the lower part of the 1st rolling-up drum 10, and is inserted with said winding core insertion roller 73 from here between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20. In addition, it is arbitrary to arrange porous formation equipment and slitting machine equipment among the advice rolls 3 and 4 with the equipment of this invention.

[0018] Below, an operation of the web take-up motion of this example is explained. The actuation which pastes up the point of a web 1 on a winding core based on drawing 5 -8 first is explained.

[0019] First, if the web 1 controlled to roll back to a web take-up motion and to become proper tension from equipment (graphic display abbreviation) is supplied, as shown in drawing 1, a web 1 will pass the advice rolls 2, 3, and 4, and will progress to the adhesives spreading section on the 1st rolling-up drum 10. The adhesives fuel injection equipment 60 applies to the elastic body 41 of the front face of the adhesives transfer roller 40 one train of adhesives 7 supplied from the adhesives feeder (graphic display abbreviation) by the nozzle 62, as shown in drawing 5. At this time, adhesives 7 are applied to the front face of the elastic body 41 of the adhesives transfer roller 40 along with that longitudinal direction by moving the adhesives transfer roller 40 to the shaft orientations of this adhesives transfer roller 40 in a cylinder 50 (referring to drawing 2). When there is few installation of the adhesives fuel injection equipment 60, if movement magnitude of the shaft orientations of the adhesives transfer roller 40 is enlarged, adhesives 7 can be applied over the longitudinal direction whole region of the elastic body 41 of the front face of the adhesives transfer roller 40, and if there is many installation, there is little movement magnitude of the shaft orientations of the adhesives transfer roller 40, and it is sufficient for it. Moreover, the coverage of adhesives 7 can be freely adjusted by adjusting the passing speed of the shaft orientations of the adhesives transfer roller 40, and the supply pressure when supplying adhesives to the adhesives fuel injection equipment 60 from an adhesives feeder.

[0020] When the adhesives transfer roller 40 is beforehand set up next from the condition shown in drawing 5, it is made to rotate with a driving gear 110 (to refer to drawing 3), and said web 1 is inserted from the location 11 near the slot 11 formed in the 1st rolling-up drum 10 as shown in drawing 6, i.e., a slot, with the 1st rolling-up drum 10 and the adhesives transfer roller 40 in the location on the backside [a hand of cut] of the 1st rolling-up drum 10. At this time, the adhesives 7 applied to the

elastic body 41 of the front face of the adhesives transfer roller 40 are pasted up on both the elastic body 41 of the front face of the adhesives transfer roller 40, and the web 1. In addition, since the elastic body 41 of the front face of the adhesives transfer roller 40 is formed with the good elastic body of detachability, when the adhesives transfer roller 40 and the 1st rolling-up drum 10 rotate, respectively and the adhesives transfer roller 40 separates from the 1st rolling-up drum 10, adhesives 7 will be altogether imprinted by the web 1, without remaining on the elastic body 41 of the front face of the adhesives transfer roller 40. At this time, the web 1 is held on the front face of the 1st rolling-up drum 10 by the attraction hole 13 and the vacuum box 14 which were formed in the front face of the 1st rolling-up drum 10.

[0021] And when the web under rolling up becomes the volume going-up roll of a predetermined size, the cam 92 attached in the shaft 91 shown in drawing 3 rotates, and they are a roller 97 and an arm 102. As shown in drawing 7, the web separation roll 30 is extruded by the cylinder 35 toward the 1st rolling-up drum 10, at the same time the web separation roll 30 starts a revolution by moving. The adhesives 7 imprinted by the web 1 are in the condition of having been arranged near said slot 11 at the backside [a hand of cut] of the 1st rolling-up drum 10, at this time. And if the web separation roll 30 is further extruded toward the 1st rolling-up drum 10 and is pushed in in the point fang furrow 11 of the web eliminator 31 when the point of the mounting spar-web eliminator 31 is in agreement with the web separation roll 30 with said slot 11, a web 1 will be torn and a web 1 will be divided into two. And web **** 1a of the separated web 1 is held at the hook formed inside the slot 11, and web point 1b is in the condition of it having been drawn in with the attraction hole 13 formed in the front face of the 1st rolling-up drum 10 as mentioned above, and having been held on the front face of the 1st rolling-up drum 10.

[0022] Subsequently, if web point 1b comes between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20 as shown in drawing 8, a winding core 74 will be lifted by the winding core insertion means 70 between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20. And this winding core 74 and web point 1b to which adhesives 7 were applied are pressurized with the 1st rolling-up drum 10, the 2nd rolling-up drum 20, and the insertion roller 73, and web point 1b pastes a winding core 74.

[0023] If web point 1b pastes a winding core 74 as mentioned above, the rotational speed of the 2nd rolling-up drum 20 is slowed down, by the speed difference of the 1st rolling-up drum 10 and the 2nd rolling-up drum 20, a winding core 74 will be advanced (drawing Nakamigi side), and rolling up of the new Maki roll will begin in the upper location of the 2nd rolling-up drum 20. On the other hand, since the log brake 21 prepared in the termination and coincidence after a volume at upper part **** of the 2nd rolling-up drum 20 goes up, the contact of the volume going-up roll 9 to the volume going-up roll 9 and the 2nd rolling-up drum 20 is lost, and the volume going-up roll 9 is breathed out by the stopper 81 (refer to drawing 1). In addition, a new winding core is inserted in blowdown and coincidence of the volume going-up roll 9 with the winding core insertion roller 73, and rolling up of the following web is started.

[0024] Below, the adhesion actuation in the case of applying the adhesives 7 and 8 of two trains based on drawing 9 -10 is explained. The adhesives fuel injection equipments 60 shown in drawing 9 are two nozzles 62 and 63 like previous statement. Since it has, the adhesives 7 and 8 of two trains can be applied to the front face of the adhesives transfer roller 40. One adhesives 7 in this case are used for fixing to the winding roll of web ****, and the adhesives 8 of another side are used for adhesion to the winding core 74 of a web point. Namely, when adhesives 7 and 8 are imprinted to a web 1 in the same way as drawing 6 -8 and it has been arranged at the both sides of this web 1 fang furrow 11, As a web 1 will be torn if the point of the web eliminator 31 is pushed in in a slot 11, this web 1 is divided into two and it is shown in drawing 10 at this time, adhesives 7 will be applied to web **** 1a, and adhesives 8 will be applied to web point 1b. And web **** 1a fixes on a volume going-up roll with adhesives 7, and web point 1b is pasted up on a winding core 74 with adhesives 8. Therefore, not only the adhesion to the winding core 74 of web point 1b but **** 1a of a volume going-up roll is fixable to the body of a roll in this case.

[0025] As mentioned above, since adhesives 7 and 8 can be applied covering the web full of the transit

direction of a web 1, and the direction of a right angle, unnecessary adhesives can be decreased in the web take-up motion of this example, discoloration and the formation of wrinkles of a web 1 moreover decrease and a winding roll can be used from the beginning to the last, it is economical. Furthermore, web ****1a Since fixing to a rolling-up roll can also be thoroughly pasted up throughout the cross direction, it does not become poor pasting up the ends of **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

[0026]

[Effect of the Invention] While applying only necessary minimum adhesives can decrease the amount of the adhesives used in this invention for a ***** reason, since there is no wrinkle, and it can roll round continuously and can be used from the beginning of a rolling-up roll to the last, it is economical.

Moreover, since fixing to the rolling-up roll of web **** can paste up thoroughly throughout the cross direction, it does not become poor pasting up the ends of **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] The 1st rolling-up drum, the 2nd rolling-up drum, and web separation roll which synchronize and rotate, The winding core insertion means for inserting a winding core between said 1st rolling-up drums and 2nd rolling-up drums, It is the web take-up motion equipped with the diameter control roll which rolls round a web with said 1st rolling-up drum and the 2nd rolling-up drum. The adhesion means for applying adhesives to the web it runs in the transit direction and the direction of a right angle of this web The pivotable adhesives transfer roller arranged so that a web may be inserted between the 1st rolling-up drums in the location near the slot formed in the front face of said 1st rolling-up drum, The web take-up motion characterized by consisting of a migration means to move this adhesives transfer roller to shaft orientations, and two or more adhesives fuel injection equipments which set suitable spacing, are arranged along with the longitudinal direction of said adhesives transfer roller, and inject adhesives on the front face of an adhesives transfer roller.

[Claim 2] The web take-up motion according to claim 1 characterized by preparing at a time one nozzle which injects adhesives in said two or more adhesives fuel injection equipments, applying adhesives to one train on the front face of an adhesives transfer roller, and pasting up a web point on a winding core with these adhesives.

[Claim 3] The web take-up motion according to claim 1 characterized by preparing at a time two nozzles which inject adhesives in said two or more adhesives fuel injection equipments, applying adhesives to two trains on the front face of an adhesives transfer roller, and performing adhesion to the winding core of a web point, and fixing to the volume going-up roll of web **** with these adhesives.

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EXAMPLE

[Example] Below, the example of this invention is explained based on a drawing. Drawing 1 shows the web take-up motion which is one example of this invention. This web take-up motion consists of the 1st rolling-up drum 10, the 2nd rolling-up drum 20, the web separation roll 30, the adhesives transfer roller 40, the adhesives fuel injection equipment 60, a winding core insertion means 70, a diameter control roll 80, and a control means 90 roughly.

[0008] As shown in the enlarged drawing of drawing 4, a slot 11 is constituted along with the longitudinal direction of the 1st rolling-up drum 10 by the front face of said 1st rolling-up drum 10, and inside the slot 11, the hook 12 for holding **** of the cut web 1 on the front face of the 1st rolling-up drum 10 is formed in it (indicated by Japanese Patent Application No. No. 305311 [three to] about the slot 11 and the detail of hook 12). In addition, maintenance of **** can adopt the means of arbitration for the approach of holding **** of the web 1 cut with the attraction hole formed in the front face of the 1st rolling-up drum 10 on the front face of the 1st rolling-up drum 10 etc. Moreover, the attraction hole 13 for holding the point of a web 1 cut from said slot 11 to the backside [the hand of cut] of the 1st rolling-up drum 10 on the front face of the 1st rolling-up drum 10 is formed in the front face of the 1st rolling-up drum 10, and this attraction hole 13 is open for free passage in the vacuum box 14. The 2nd rolling-up drum 20 shown in drawing 1, is a drum for rotating synchronizing with the 1st rolling-up drum 10, and rolling round a web 1 with this 1st rolling-up drum 10.

[0009] As shown in drawing 4, the web eliminator 31 which has a **** member along the direction of a normal of the web separation roll 30 is attached in the front face of the web separation roll 30, and in order to prevent a gap of a web 1 on both sides of this web eliminator 31, the elastic body 32 is attached. In addition, this elastic body 32 is formed with the good ingredient of detachability, for example, silicone rubber etc., in order to avoid adhesion with the adhesives mentioned later. This web separation roll 30 is supported by the arm 33 pivotable, and is connected with the gear train which is not illustrated so that it may rotate synchronizing with said 1st rolling-up drum 10. Moreover, between the web separation roll 30 and a frame (graphic display abbreviation), cylinders 35 are pins 34 and 36. It is connected and this cylinder 35 constitutes the web separation roll 30 possible [press] in the 1st rolling-up drum 10 side.

[0010] If the point of the web eliminator 31 is pushed in in a slot 11 when the point of said web eliminator 31 is in agreement with said slot 11 while said web separation roll 30 is carrying out the synchronous revolution with the 1st rolling-up drum 10, a web 1 will be torn and a web 1 will be divided into two. in addition, as a means to divide a web 1 into two The Annville knife is formed in this 1st rolling-up drum 10 hand-of-cut side face in the slot 11 formed in the front face of the 1st rolling-up drum 10 while forming a cutter knife in the web eliminator 31. When rushing in into the slot 11 where the web eliminator 31 was formed in the front face of the 1st rolling-up drum 10 The means of arbitration, such as the approach (patent application on December 14, Heisei 3 "the web cutting equipment in a web take-up motion") of contacting said cutter knife and said Annville knife, and carrying out share KATTEIGU of the web 1, is employable.

[0011] Said adhesives transfer roller 40 is formed so that adhesives may be applied over the longitudinal

direction of the front face of this adhesives transfer roller 40. That is, as shown in drawing 2 (B), the convex height was formed in the longitudinal direction of a cylinder-like roll, and the good elastic body 41 of detachability has fixed in the front face of this convex height. And said adhesives transfer roller 40 is the bearing 42 and 49 fixed to the frames 5 and 6 installed in the shaft orientations and the right angle of the adhesives transfer roller 40 as shown in drawing 2 (A). And this bearing 42 and 49 It is supported by the supported ball bearings 45 and 48. Bearing 44 is inserted in inside said ball bearing 45, and it is one shaft 40a of this bearing 44 and the adhesives transfer roller 40. It is formed in the castellated shaft 43 in between. Moreover, bearing 47 is inserted in also inside a ball bearing 48, and it is one shaft 40b of this bearing 47 and the adhesives transfer roller 40. It is formed in the castellated shaft 46 in between. Although a ball spline etc. is used, for example and a revolution is transmitted as said castellated shafts 43 and 46, sliding of shaft orientations is possible.

[0012] On the other hand, a connecting shaft 55 is minded [of said bearing 47], and it is a driving gear 110. It is connected. Moreover, one shaft 40a of said adhesives transfer roller 40 A ball bearing 53 is installed in an axis end, and this ball bearing 53 is supported by the thrust carrier 52. It does not rotate, even if the adhesives transfer roller 40 rotates this thrust carrier 52, and the cylinder 50 supported by the base material 51 fixed to the frame 6 is connected with this thrust carrier 52. Therefore, if this cylinder 50 is made to expand and contract, the adhesives transfer roller 40 can be moved to shaft orientations. This cylinder 50 constitutes the migration means said to a claim.

[0013] Said adhesives fuel injection equipment 60 is supported by the adhesives fuel-injection-equipment base material 61, opens suitable spacing along with the longitudinal direction of the front face of said adhesives transfer roller 40, and is arranged two or more sets. For this reason, when said adhesives transfer roller 40 moves to the shaft orientations of this adhesives transfer roller 40, adhesives 7 can be applied to the front face of the adhesives transfer roller 40 continuously or intermittently. In this adhesives fuel injection equipment 60, it is a nozzle (a spray shall be included in the nozzle as used in this description). the following -- being the same -- one piece or the thing prepared two pieces is used, and with the adhesives fuel injection equipment 60 which prepared one nozzle, as shown in drawing 5 , adhesives can be applied to a single tier (7), and with the adhesives fuel injection equipment 60 which prepared two nozzles, as shown in drawing 9 , adhesives can be applied to two trains (7 8). In addition, what prepared two or more nozzles in each adhesives fuel injection equipment 60 at one train or two trains may be used. "Every one piece" said to a claim is a concept also including one train of two or more nozzles. Moreover, "every two pieces" is the concepts also containing what has arranged two trains of nozzle groups of each train some. Furthermore, if the constant-rate revolution of the adhesives transfer roller 40 is carried out and single-tier (8) spreading is already carried out after carrying out one train (7) spreading of the adhesives also with the equipment which prepared the nozzle in one train, the adhesives 7 and 8 of two trains can be obtained.

[0014] It is equipment for said winding core insertion means 70 to insert a winding core 74 between said 1st rolling-up drums 10 and said 2nd rolling-up drums 20, and an arm 72 is formed in the winding core insertion mechanism 71, and the insertion roller 73 is attached at the head of this arm 72. Moreover, cam follower 104 shown in the winding core insertion mechanism 71 at drawing 3 It is fixed, and to mention later, directly in response to the fact that a motion of a cam 94, insertion actuation is controlled.

[0015] Said diameter control roll 80 is a roll for rolling round a web 1 with said 1st rolling-up drum 10 and the 2nd rolling-up drum 20, and rolling round until it becomes a desired volume going-up dimension, and pressing down the inner roll. Actuation of the diameter control roll 80 is controlled by the cam carried out one revolution, while rolling round one log with the servo motor (graphic display abbreviation) which rotates until the encoder signal which shows a real engine speed to the set-up volume die-length signal is in agreement, and this servo motor.

[0016] Said control means 90 is equipment which controls actuation of the 2nd rolling-up drum 20, the web separation roll 30, the adhesives transfer roller 40, the winding core insertion means 70, and the log brake 21. This control means 90 is a shaft 91, cams 92-96, and the adhesives transfer roller actuation gear 107-109, as shown in drawing 3 . And driving gear 110,111 It is constituted. Driving gear 111 Only the rotational frequency determined by relation with the 1st rolling-up drum 10 is this driving gear 111.

It is a motor (or mechanical change gear style) for rotating the shaft 91 connected. Although the shaft 91 is set up in this example so that it may rotate one time by eight revolutions of the 1st rolling-up drum 10, this ratio can be set up freely. And the cam 96 for controlling the cam 94 and the log brake 21 for controlling the cam 93 for controlling the cams 92 and 95 for controlling the web separation roll 30 and the 2nd rolling-up drum 20 and the winding core insertion means 70 is being fixed to the shaft 91, and each cam is set up so that each equipment may work to each timing. moreover, a shaft 91 is supported on frames 5 and 6 -- having -- this shaft 91 -- the actuation gear 107, 109, and 108 it connects with the order -- having -- actuation gear 108 **** -- driving gear 110 It is connected. Driving gear 110 It is a device for driving the adhesives transfer roller 40 at the rate doubled with the 1st rolling-up drum 10. In addition, although here shows the control means by the mechanical approach, the control means by the electric approach of a motor etc. is also possible.

[0017] A winding core 75 is carried from the winding core alignment station 76 by the transporter 77 above. And the top winding core 74 stands by in the lower part of the 1st rolling-up drum 10, and is inserted with said winding core insertion roller 73 from here between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20. In addition, it is arbitrary to arrange porous formation equipment and slitting machine equipment among the advice rolls 3 and 4 with the equipment of this invention.

[0018] Below, an operation of the web take-up motion of this example is explained. The actuation which pastes up the point of a web 1 on a winding core based on drawing 5 -8 first is explained.

[0019] First, if the web 1 controlled to roll back to a web take-up motion and to become proper tension from equipment (graphic display abbreviation) is supplied, as shown in drawing 1, a web 1 will pass the advice rolls 2, 3, and 4, and will progress to the adhesives spreading section on the 1st rolling-up drum 10. The adhesives fuel injection equipment 60 applies to the elastic body 41 of the front face of the adhesives transfer roller 40 one train of adhesives 7 supplied from the adhesives feeder (graphic display abbreviation) by the nozzle 62, as shown in drawing 5. At this time, adhesives 7 are applied to the front face of the elastic body 41 of the adhesives transfer roller 40 along with that longitudinal direction by moving the adhesives transfer roller 40 to the shaft orientations of this adhesives transfer roller 40 in a cylinder 50 (referring to drawing 2). When there is few installation of the adhesives fuel injection equipment 60, if movement magnitude of the shaft orientations of the adhesives transfer roller 40 is enlarged, adhesives 7 can be applied over the longitudinal direction whole region of the elastic body 41 of the front face of the adhesives transfer roller 40, and if there is many installation, there is little movement magnitude of the shaft orientations of the adhesives transfer roller 40, and it is sufficient for it. Moreover, the coverage of adhesives 7 can be freely adjusted by adjusting the passing speed of the shaft orientations of the adhesives transfer roller 40, and the supply pressure when supplying adhesives to the adhesives fuel injection equipment 60 from an adhesives feeder.

[0020] When the adhesives transfer roller 40 is beforehand set up next from the condition shown in drawing 5, it is made to rotate with a driving gear 110 (to refer to drawing 3), and said web 1 is inserted from the location 11 near the slot 11 formed in the 1st rolling-up drum 10 as shown in drawing 6, i.e., a slot, with the 1st rolling-up drum 10 and the adhesives transfer roller 40 in the location on the backside [a hand of cut] of the 1st rolling-up drum 10. At this time, the adhesives 7 applied to the elastic body 41 of the front face of the adhesives transfer roller 40 are pasted up on both the elastic body 41 of the front face of the adhesives transfer roller 40, and the web 1. In addition, since the elastic body 41 of the front face of the adhesives transfer roller 40 is formed with the good elastic body of detachability, when the adhesives transfer roller 40 and the 1st rolling-up drum 10 rotate, respectively and the adhesives transfer roller 40 separates from the 1st rolling-up drum 10, adhesives 7 will be altogether imprinted by the web 1, without remaining on the elastic body 41 of the front face of the adhesives transfer roller 40. At this time, the web 1 is held on the front face of the 1st rolling-up drum 10 by the attraction hole 13 and the vacuum box 14 which were formed in the front face of the 1st rolling-up drum 10.

[0021] And when the web under rolling up becomes the volume going-up roll of a predetermined size, the cam 92 attached in the shaft 91 shown in drawing 3 rotates, and they are a roller 97 and an arm 102. As shown in drawing 7, the web separation roll 30 is extruded by the cylinder 35 toward the 1st rolling-

up drum 10, at the same time the web separation roll 30 starts a revolution by moving. The adhesives 7 imprinted by the web 1 are in the condition of having been arranged near said slot 11 at the backside [a hand of cut] of the 1st rolling-up drum 10, at this time. And if the web separation roll 30 is further extruded toward the 1st rolling-up drum 10 and is pushed in in the point fang furrow 11 of the web eliminator 31 when the point of the mounting spar-web eliminator 31 is in agreement with the web separation roll 30 with said slot 11, a web 1 will be torn and a web 1 will be divided into two. And web **** 1a of the separated web 1 is held at the hook formed inside the slot 11, and web point 1b is in the condition of it having been drawn in with the attraction hole 13 formed in the front face of the 1st rolling-up drum 10 as mentioned above, and having been held on the front face of the 1st rolling-up drum 10.

[0022] Subsequently, if web point 1b comes between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20 as shown in drawing 8, a winding core 74 will be lifted by the winding core insertion means 70 between the 1st rolling-up drum 10 and the 2nd rolling-up drum 20. And this winding core 74 and web point 1b to which adhesives 7 were applied are pressurized with the 1st rolling-up drum 10, the 2nd rolling-up drum 20, and the insertion roller 73, and web point 1b pastes a winding core 74.

[0023] If web point 1b pastes a winding core 74 as mentioned above, the rotational speed of the 2nd rolling-up drum 20 is slowed down, by the speed difference of the 1st rolling-up drum 10 and the 2nd rolling-up drum 20, a winding core 74 will be advanced (drawing Nakamigi side), and rolling up of the new Maki roll will begin in the upper location of the 2nd rolling-up drum 20. On the other hand, since the log brake 21 prepared in the termination and coincidence after a volume at upper part **** of the 2nd rolling-up drum 20 goes up, the contact of the volume going-up roll 9 to the volume going-up roll 9 and the 2nd rolling-up drum 20 is lost, and the volume going-up roll 9 is breathed out by the stopper 81 (refer to drawing 1). In addition, a new winding core is inserted in blowdown and coincidence of the volume going-up roll 9 with the winding core insertion roller 73, and rolling up of the following web is started.

[0024] Below, the adhesion actuation in the case of applying the adhesives 7 and 8 of two trains based on drawing 9 -10 is explained. The adhesives fuel injection equipments 60 shown in drawing 9 are two nozzles 62 and 63 like previous statement. Since it has, the adhesives 7 and 8 of two trains can be applied to the front face of the adhesives transfer roller 40. One adhesives 7 in this case are used for fixing to the winding roll of web ****, and the adhesives 8 of another side are used for adhesion to the winding core 74 of a web point. Namely, when adhesives 7 and 8 are imprinted to a web 1 in the same way as drawing 6 -8 and it has been arranged at the both sides of this web 1 fang furrow 11, As a web 1 will be torn if the point of the web eliminator 31 is pushed in in a slot 11, this web 1 is divided into two and it is shown in drawing 10 at this time, adhesives 7 will be applied to web **** 1a, and adhesives 8 will be applied to web point 1b. And web **** 1a fixes on a volume going-up roll with adhesives 7, and web point 1b is pasted up on a winding core 74 with adhesives 8. Therefore, not only the adhesion to the winding core 74 of web point 1b but **** 1a of a volume going-up roll is fixable to the body of a roll in this case.

[0025] As mentioned above, since adhesives 7 and 8 can be applied covering the web full of the transit direction of a web 1, and the direction of a right angle, unnecessary adhesives can be decreased in the web take-up motion of this example, discoloration and the formation of wrinkles of a web 1 moreover decrease and a winding roll can be used from the beginning to the last, it is economical. Furthermore, web **** 1a Since fixing to a rolling-up roll can also be thoroughly pasted up throughout the cross direction, it does not become poor pasting up the ends of **** of a rolling-up roll, but handling becomes convenient even if it is a broad roll.

[Translation done.]

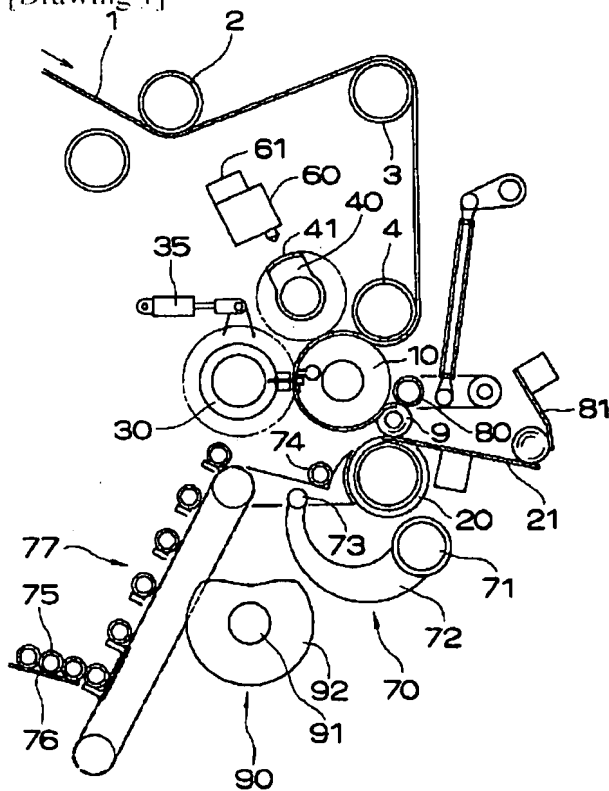
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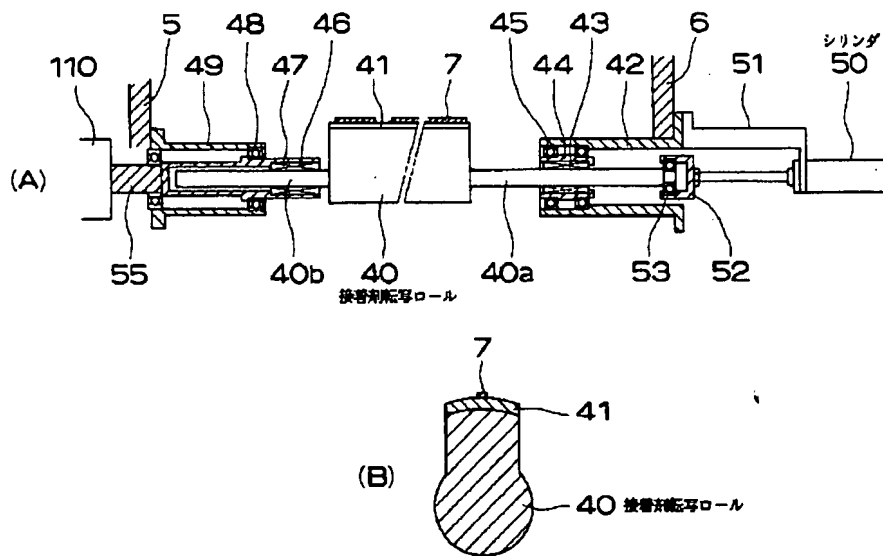
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DRAWINGS

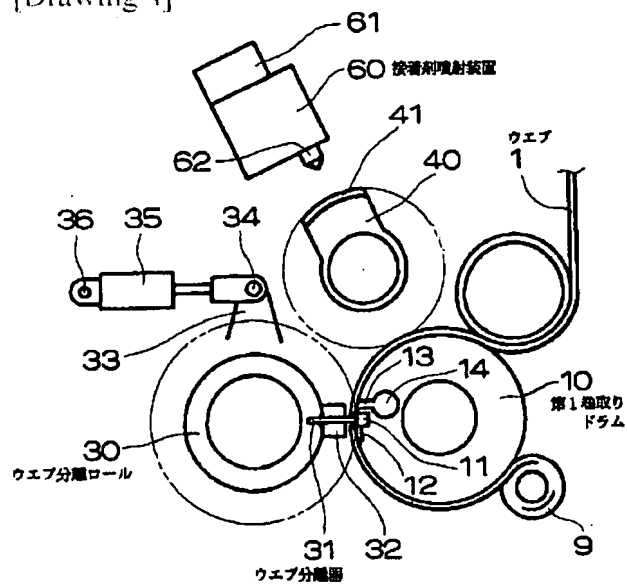
[Drawing 1]



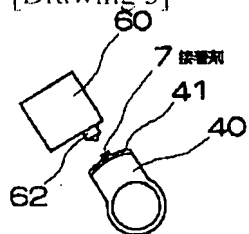
[Drawing 2]



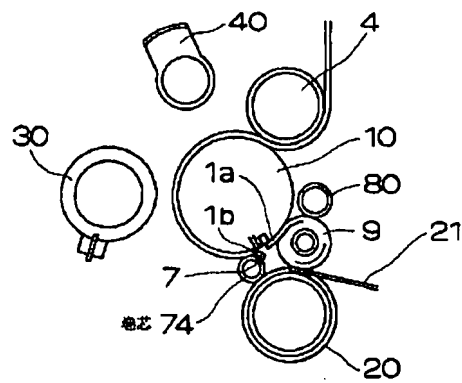
[Drawing 4]



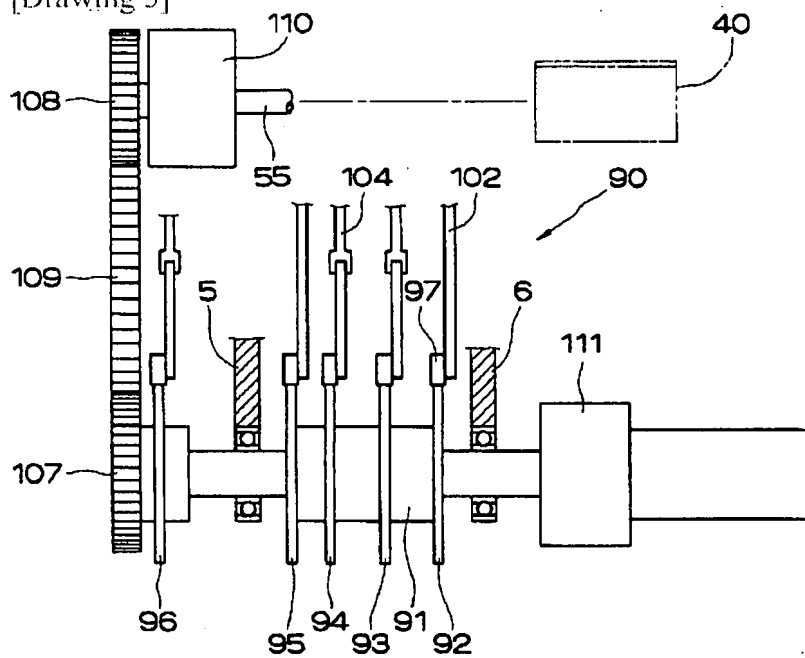
[Drawing 5]



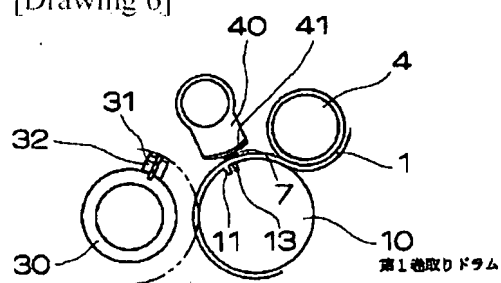
[Drawing 8]



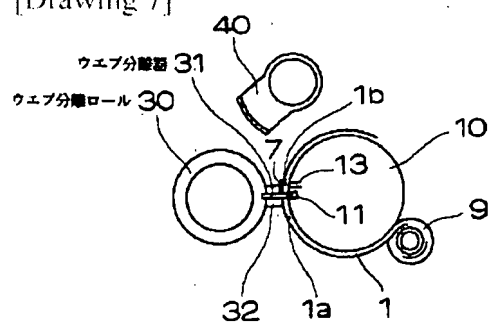
[Drawing 3]



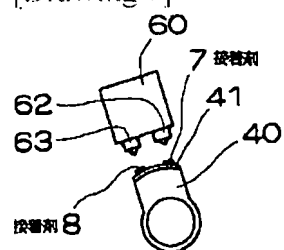
[Drawing 6]



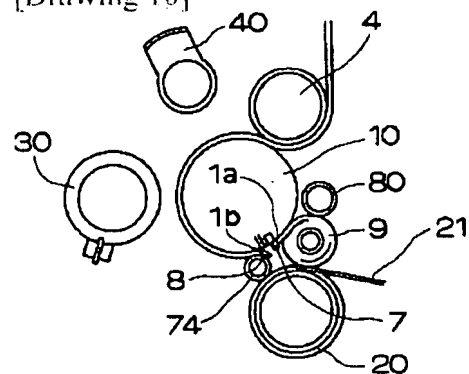
[Drawing 7]



[Drawing 9]



[Drawing 10]



[Translation done.]

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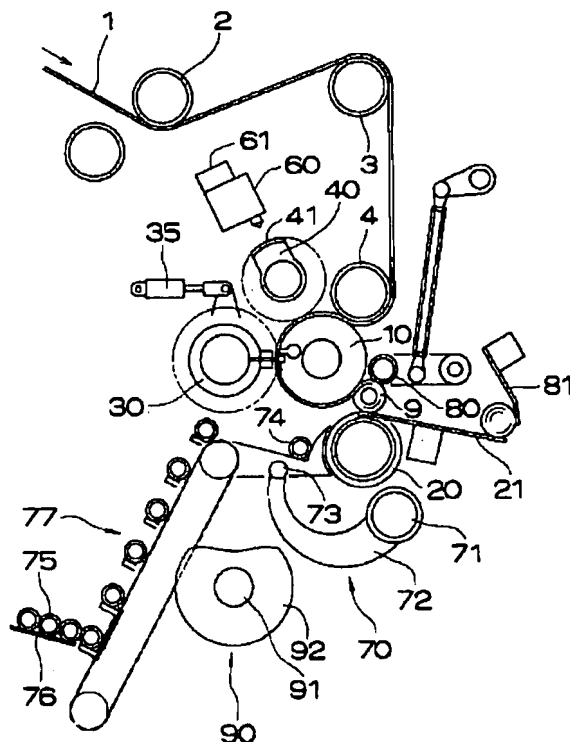
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(54) 【発明の名称】 ウェブ巻取り装置

(57) 【要約】

【目的】 伸びの少ないウェブ（たとえば、コピー用紙や壁紙など）であっても皺が少なく最初から最後まで連続して巻取ることができるように接着剤の影響を最小限にすることができるウェブ巻取り装置を提供する。

【構成】 走行するウェブ1に該ウェブ1の走行方向と直角方向に接着剤7を塗布するための接着手段が、前記第1巻取りドラム10の表面に形成された溝11の近くの位置で第1巻取りドラム10との間でウェブ1を挟むように配置された回転可能な接着剤転写ロール40と、該接着剤転写ロール40を軸方向へ移動させる移動手段と、前記接着剤転写ロール40の長手方向に沿って適当な間隔をおいて配置した複数の接着剤噴射装置60とからなる。



【特許請求の範囲】

【請求項1】同期して回転する第1巻取りドラム、第2巻取りドラムおよびウェブ分離ロールと、前記第1巻取りドラムと第2巻取りドラムとの間に巻芯を挿入するための巻芯挿入手段と、前記第1巻取りドラムおよび第2巻取りドラムとともにウェブを巻取る直径制御ロールとを備えたウェブ巻取り装置であって、走行するウェブに該ウェブの走行方向と直角方向に接着剤を塗布するための接着手段が、

前記第1巻取りドラムの表面に形成された溝の近くの位置で第1巻取りドラムとの間でウェブを挟むように配置された回転可能な接着剤転写ロールと、

該接着剤転写ロールを軸方向へ移動させる移動手段と、前記接着剤転写ロールの長手方向に沿って適当な間隔をおいて配置されており、接着剤を接着剤転写ロールの表面に噴射する複数の接着剤噴射装置とからなることを特徴とするウェブ巻取り装置。

【請求項2】前記複数の接着剤噴射装置に接着剤を噴射するノズルが1個づつ設けられており、接着剤転写ロールの表面に接着剤を1列に塗布し、該接着剤によりウェブ先端部を巻芯へ接着するようにしたことを特徴とする請求項1記載のウェブ巻取り装置。

【請求項3】前記複数の接着剤噴射装置に接着剤を噴射するノズルが2個づつ設けられており、接着剤転写ロールの表面に接着剤を2列に塗布し、該接着剤によりウェブ先端部の巻芯への接着と、ウェブ尾縁の巻上りロールへの固着を行うようにしたことを特徴とする請求項1記載のウェブ巻取り装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、ウェブ巻取り装置に関する。さらに詳しくは、比較的大型の親ロール紙から紙を巻戻して比較的小型の複数の消費者用ロールに巻直す場合に使用されるウェブ巻取り装置に関する。なお消費者用ロールの代表的なものとしては、市販されているトイレットペーパー、ティッシュペーパー、タオルペーパーなどのクレープのある紙（伸びの多い紙）や、コピー用紙、壁紙などクレープのない（伸びの少ない紙）ロール巻などがある

【0002】

【従来の技術】従来のウェブ巻取り装置では、ウェブ先端部の巻芯への接着およびウェブ尾縁の巻上りロールへの固着はつぎのような方法で行われていた。すなわち、ウェブの先端部を巻芯に接着する場合は、接着剤を巻芯の表面にリング状に塗布し、ロールの巻取り開始時にウェブ先端部を巻芯に貼り付けていた。また、ロールの巻上に伴って切断されたウェブの尾縁を巻上りロールに固着する場合には、ウェブの走行方向に沿ってウェブに直接接着剤を塗布し、ウェブ尾縁を巻上りロールに貼り付けて固着していた。

【0003】

【発明が解決しようとする課題】ところが、前記従来のウェブ巻取り装置における接着剤塗布方法では、接着剤を巻芯の表面にリング状に塗布したり、ウェブの走行方向に沿って塗布するため、接着剤塗布面積が必要以上に大きくなり接着剤の使用量が多くなるという問題がある。また、このように接着剤を多く使用したにも拘らず接着が十分でない場合も生ずる。とくに、ウェブの走行方向に沿ってウェブに直接接着剤を塗布する場合は、接着剤がウェブの全幅にわたって塗布されないこともあり、幅広のロール巻製品ではウェブ尾縁の巻上りロールへの固着が十分でなく、巻上りロールの表面が美しく仕上がらず商品価値が落ちるという問題がある。さらに、接着剤を巻芯の表面にリング状に塗布したり、ウェブの走行方向に沿ってウェブに直接接着剤を塗布する場合は、必要以上に接着剤を多く塗布することとなり、接着剤が塗布された部分のウェブが変質したり、皺ができることとなるので使用できる紙の量が少なくなる。このため、巻上りロール1個分でできる限り多く使用できなければならぬコピー用紙や壁紙などの付加価値の高い製品にとっては、従来の接着方法は経済的ではない。

【0004】本発明は、かかる事情に鑑み、比較的高速で連続的に走行するウェブを巻芯に巻取る場合に、接着剤の使用量を減少させるとともに、伸びの少ないウェブ（たとえば、コピー用紙や壁紙など）であっても皺がなく最初から最後まで連続して巻取ることができるようになるように接着剤の影響を最小限にすることができる接着手段を形成したウェブ巻取り装置を提供することを目的とする。

【0005】

【課題を解決するための手段】本発明のウェブ巻取り装置は、同期して回転する第1巻取りドラム、第2巻取りドラムおよびウェブ分離ロールと、前記第1巻取りドラムと第2巻取りドラムとの間に巻芯を挿入するための巻芯挿入手段と、前記第1巻取りドラムおよび第2巻取りドラムとともにウェブを巻取る直径制御ロールとを備えたウェブ巻取り装置であって、走行するウェブに該ウェブの走行方向と直角方向に接着剤を塗布するための接着手段が、前記第1巻取りドラムの表面に形成された溝の近くの位置で第1巻取りドラムとの間でウェブを挟むように配置された回転可能な接着剤転写ロールと、該接着剤転写ロールを軸方向へ移動させる移動手段と、前記接着剤転写ロールの長手方向に沿って適当な間隔をおいて配置されており、接着剤を接着剤転写ロールの表面に噴射する複数の接着剤噴射装置とからなることを特徴とする。

【0006】

【作用】本発明のウェブ巻取り装置では、接着剤を噴射する接着剤噴射装置に対して接着剤転写ロールがその軸方向に移動するため、接着剤転写ロールの表面に、その長手方向に沿って接着剤を塗布できる。そして、接着剤

転写ロール表面に塗布された接着剤は、接着剤転写ロールの回転によって第1巻取りドラム上を走行中のウェブに転写されるため、ウェブの走行方向と直角方向のウェブ全幅にわたって接着剤を塗布できることになる。このため、従来の接着方法に比べて不必要な接着剤を減少することができ、また、ウェブ分離後のウェブ先端部やウェブ尾縁には必要最小限の接着剤のみが塗布されるため、皺がなく巻取りロールの最初から最後まで連続して使用することができるので経済的である。また、ウェブ尾縁の巻取りロールへの固着が幅方向全域で完全に接着

【0007】

【実施例】つぎに、本発明の実施例を図面に基づき説明する。図1は本発明の一実施例であるウェブ巻取り装置を示している。このウェブ巻取り装置は、概略的には第1巻取りドラム10、第2巻取りドラム20、ウェブ分離ロール30、接着剤転写ロール40、接着剤噴射装置60、巻芯挿入手段70、直径制御ロール80および制御手段90から構成されている。

【0008】前記第1巻取りドラム10の表面には、図4の拡大図に示すように第1巻取りドラム10の長手方向に沿って溝11が構成され、その溝11の内側には切断したウェブ1の尾縁を第1巻取りドラム10の表面に保持するためのフック12が形成されている（溝11およびフック12の詳細については特願平3-305311号に開示されている）。なお尾縁の保持は、第1巻取りドラム10の表面に形成した吸引孔によって切断されたウェブ1の尾縁を第1巻取りドラム10の表面に保持する方法など、任意の手段を採用することができる。また、第1巻取りドラム10の表面には、前記溝11より第1巻取りドラム10の回転方向後側に、切断したウェブ1の先端部を第1巻取りドラム10の表面に保持するための吸引孔13が形成され、該吸引孔13は真空ボックス14に連通している。図1に示す第2巻取りドラム20は、第1巻取りドラム10と同期して回転し、該第1巻取りドラム10とともにウェブ1を巻取るためのドラムである。

【0009】ウェブ分離ロール30の表面には、図4に示すようにウェブ分離ロール30の法線方向に沿って剛部材を有するウェブ分離器31が取り付けられており、該ウェブ分離器31の両側にはウェブ1のずれを防止するため弾性体32が取り付けられている。なおこの弾性体32は後述する接着剤との付着を避けるため剥離性の良い材料、たとえばシリコンゴムなどで形成される。このウェブ分離ロール30は、アーム33に回転可能に支持されており、前記第1巻取りドラム10と同期して回転するように図示しないギヤトレーンなどで連結されている。また、ウェブ分離ロール30とフレーム（図示省略）との間にはシリンドラ35がピン34, 36によって連結されており、該シリンドラ35によって、ウェブ分離ロール30を第1巻取りドラム

10側に押圧可能に構成している。

【0010】前記ウェブ分離ロール30が第1巻取りドラム10と同期回転している間、前記ウェブ分離器31の先端部が前記溝11と一致した時点で、ウェブ分離器31の先端部を溝11内に押し込むと、ウェブ1は引き裂かれてウェブ1は2つに分離される。なお、ウェブ1を2つに分離する手段としては、ウェブ分離器31にカッタナイフを形成すると共に、第1巻取りドラム10の表面に形成された溝11内の該第1巻取りドラム10回転方向側面にアンビルナイフを形成し、ウェブ分離器31が第1巻取りドラム10の表面に形成された溝11内に突入するとき前記カッタナイフと前記アンビルナイフとを接触させてウェブ1をシェアカッティングする方法（平成3年12月14日付特許願「ウェブ巻取り装置におけるウェブ切断装置」）など任意の手段を採用することができる。

【0011】前記接着剤転写ロール40は、該接着剤転写ロール40の表面の長手方向にわたって接着剤が塗布されるように形成されている。すなわち、図2（B）に示すように円柱状のロールの長手方向に凸状突起部が形成され、該凸状突起部の表面には剥離性の良い弾性体41が固着されている。そして、前記接着剤転写ロール40は、図2（A）に示すように接着剤転写ロール40の軸方向と直角に設置されたフレーム5、6に固定された軸受42, 49および該軸受42, 49に支持された玉軸受45, 48により支持されている。前記玉軸受45の内側には軸受44が嵌められ、該軸受44と接着剤転写ロール40の一方の軸40aとの間はスプライン軸43に形成されている。また玉軸受48の内側にも軸受47が嵌められ、該軸受47と接着剤転写ロール40の一方の軸40bとの間はスプライン軸46に形成されている。前記スプライン軸43, 46としては、たとえばボールスプラインなどが使用され、回転は伝達するが軸方向の撓動は可能となっている。

【0012】一方、前記軸受47の軸端には連結軸55を介して駆動装置110が連結されている。また、前記接着剤転写ロール40の一方の軸40aの軸端には玉軸受53が設置され、該玉軸受53はスラスト受52に支持されている。このスラスト受52は接着剤転写ロール40が回転しても回転することがなく、該スラスト受52にはフレーム6に固定された支持体51に支持されたシリンダ50が連結されている。したがってこのシリンダ50を伸縮させれば接着剤転写ロール40を軸方向に移動させることができる。このシリンダ50は特許請求の範囲にいう移動手段を構成している。

【0013】前記接着剤噴射装置60は、接着剤噴射装置支持体61に支持され、前記接着剤転写ロール40の表面の長手方向に沿って適当な間隔をあけて複数台配置されている。このため、前記接着剤転写ロール40が該接着剤転写ロール40の軸方向に移動したとき接着剤転写ロール40の表面に接着剤7を連続的または断続的に塗布することができる。この接着剤噴射装置60にはノズル（本明細書

でいうノズルにはスプレーを含むものとする。以下同じ)を1個または2個設けたものが用いられ、ノズルを1個設けた接着剤噴射装置60では図5に示すように接着剤を1列(7)に塗布し、ノズルを2個設けた接着剤噴射装置60では図9に示すように接着剤を二列(7, 8)に塗布することができる。なお個々の接着剤噴射装置60に2以上のノズルを1列または2列に設けたものでもよい。特許請求の範囲にいう「1個づつ」というのは2以上のノズルの1列も含む概念である。また、「2個づつ」というのは各列数個のノズル群を2列配置したものも含む概念である。さらに、ノズルを1列に設けた装置でも接着剤を1列(7)塗布してから接着剤転写ロール40を一定量回転させ、もう一列(8)塗布すると2列の接着剤7, 8を得ることができる。

【0014】前記巻芯挿入手段70は、前記第1巻取りドラム10と前記第2巻取りドラム20との間に巻芯74を挿入するための装置であり、巻芯挿入機構71にアーム72が形成され、該アーム72の先端に挿入ローラ73が取付けられている。また、巻芯挿入機構71には、図3に示すカムフォロア104が固定されており、後述するごとくカム94の動きを直接受けて、挿入動作が制御されるようになってい

る。

【0015】前記直径制御ロール80は、前記第1巻取りドラム10および第2巻取りドラム20と共にウェブ1を巻取り、かつ所望の巻上り寸法になるまで巻取り中のロールを押えておくためのロールである。その直径制御ロール80の動作は、設定された巻長さ信号に実回転数を示すエンコーダ信号が一致するまで回転するサーボモータ(図示省略)と、該サーボモータによりログ1本巻取る間に1回転させられるカムにより制御されるようになってい

る。

【0016】前記制御手段90は、第2巻取りドラム20、ウェブ分離ロール30、接着剤転写ロール40、巻芯挿入手段70およびログブレーキ21の動作を制御する装置である。この制御手段90は図3に示すように、軸91、カム92~96、接着剤転写ロール駆動ギヤ107~109および駆動装置110, 111によって構成されている。駆動装置111は、第1巻取りドラム10との関係で決定される回転数だけ該駆動装置111に連結されている軸91を回転させるためのモータ(または機械的変速機構)である。本実施例では、軸91は第1巻取りドラム10の8回転で1回転するように設定されているが、この比率は自由に設定可能である。そして、軸91にはウェブ分離ロール30を制御するためのカム92, 95、第2巻取りドラム20を制御するためのカム93、巻芯挿入手段70を制御するためのカム94およびログブレーキ21を制御するためのカム96が固定されており、各カムは、それぞれのタイミングで各装置が働くように設定されている。また、軸91はフレーム5, 6に支持され、該軸91には駆動ギヤ107, 109, 108がその順に連結され、駆動ギヤ108には駆動装置110に連結さ

れている。駆動装置110は、第1巻取りドラム10に合わせた速度で接着剤転写ロール40を駆動するための機構である。なお、ここでは機械的方法による制御手段を示しているが、モータ等の電気的方法による制御手段も可能である。

【0017】巻芯75は運搬装置77によって巻芯整列ステーション76から上方向へ運搬されるようになっている。そして、先頭の巻芯74は、第1巻取りドラム10の下方で待機し、ここから前記巻芯挿入ローラ73によって第1巻取りドラム10と第2巻取りドラム20との間に挿入される。なお本発明の装置では、案内ロール3と4の間に多孔形成装置やスリット装置を配置することは任意である。

【0018】つぎに、本実施例のウェブ巻取り装置の作用を説明する。最初に図5~8に基づきウェブ1の先端部を巻芯に接着する動作を説明する。

【0019】まず、ウェブ巻取り装置に巻返し装置(図示省略)より適正な張力となるように制御されたウェブ1が供給されると、図1に示すようにウェブ1は、案内ロール2, 3, 4を通過して第1巻取りドラム10上の接着剤塗布部まで進む。接着剤噴射装置60は、図5に示すように、接着剤供給装置(図示省略)から供給された接着剤7をノズル62によって接着剤転写ロール40の表面の弾性体41に1列塗布する。このとき、接着剤転写ロール40をシリンダ50(図2参照)により該接着剤転写ロール40の軸方向に移動させることにより、接着剤転写ロール40の弾性体41の表面に、その長手方向に沿って接着剤7が塗布される。接着剤噴射装置60の設置数が少ない場合は、接着剤転写ロール40の軸方向の移動量を大きくすれば接着剤転写ロール40の表面の弾性体41の長手方向全域にわたって接着剤7を塗布することができ、設置数が多ければ接着剤転写ロール40の軸方向の移動量は少なくても足りる。また、接着剤転写ロール40の軸方向の移動速度と、接着剤供給装置より接着剤を接着剤噴射装置60に供給するときの供給圧力とを調整することにより接着剤7の塗布量を自由に調整することができる。

【0020】つぎに、図5に示した状態から接着剤転写ロール40を予め設定された時点において駆動装置110

(図3参照)により回転させ、図6に示すように第1巻取りドラム10に形成した溝11の近くの位置、すなわち溝11より第1巻取りドラム10の回転方向後側の位置で前記ウェブ1を第1巻取りドラム10と接着剤転写ロール40で挟むようにする。このとき、接着剤転写ロール40の表面の弾性体41に塗布されていた接着剤7は、接着剤転写ロール40の表面の弾性体41とウェブ1の両方に接着される。なお接着剤転写ロール40の表面の弾性体41は、剥離性の良い弾性体で形成されているため、接着剤転写ロール40と第1巻取りドラム10とがそれぞれ回転し接着剤転写ロール40が第1巻取りドラム10から離れるときに、接着剤7は接着剤転写ロール40の表面の弾性体41に残る

ことなくすべてウェブ1に転写されることとなる。このとき、ウェブ1は第1巻取りドラム10の表面に形成した吸孔13および真空ボックス14によって第1巻取りドラム10の表面に保持されている。

【0021】そして、巻取り中のウェブが所定の太さの巻上りロールになると、図3に示す軸91に取り付けられたカム92が回転し、ローラ97およびアーム102を動かすことによりウェブ分離ロール30が回転を開始すると同時に、図7に示すようにウェブ分離ロール30がシリンダ35によって第1巻取りドラム10に向かって押し出される。このとき、ウェブ1に転写された接着剤7は、前記溝11の近傍で第1巻取りドラム10の回転方向後側に配置された状態となっている。そして、ウェブ分離ロール30に取付けたウェブ分離器31の先端部が前記溝11と一致したとき、ウェブ分離ロール30が第1巻取りドラム10に向かってさらに押し出されウェブ分離器31の先端部が溝11内に押し込まれると、ウェブ1は引き裂かれてウェブ1は2つに分離される。そして、分離されたウェブ1のウェブ尾縁1aは、溝11の内側に形成されたフックに保持され、ウェブ先端部1bは、前述したように第1巻取りドラム10の表面に形成した吸孔13で吸引されて第1巻取りドラム10の表面に保持された状態となっている。

【0022】ついで、図8に示すようにウェブ先端部1bが第1巻取りドラム10と第2巻取りドラム20との間にくると、巻芯74は、巻芯挿入手段70によって第1巻取りドラム10と第2巻取りドラム20との間まで持ち上げられる。そして、該巻芯74と接着剤7を塗布されたウェブ先端部1bとが、第1巻取りドラム10、第2巻取りドラム20および挿入ローラ73によって加圧され、ウェブ先端部1bが巻芯74に接着される。

【0023】以上のようにしてウェブ先端部1bが巻芯74に接着されると、第2巻取りドラム20の回転速度が減速され、第1巻取りドラム10と第2巻取りドラム20との速度差によって巻芯74を前進（図中右側）させ、第2巻取りドラム20の上方の位置で新しい巻ロールの巻取りが開始する。一方、巻上りロール9は、巻上りの終了と同時に第2巻取りドラム20の上方近傍に設けられたログブレーキ21が上昇するため、巻上りロール9と第2巻取りドラム20との接触がなくなり、巻上りロール9はストップ81（図1参照）に吐き出される。なお巻上りロール9の排出と同時に新しい巻芯が巻芯挿入ローラ73によって挿入され、つぎのウェブの巻取りが開始される。

【0024】つぎに、図9～10に基づき2列の接着剤7、8を塗布する場合の接着動作を説明する。既述のごとく図9に示す接着剤噴射装置60は2個のノズル62、63を有しているので、接着剤転写ロール40の表面に2列の接着剤7、8を塗布することができる。この場合の一方の接着剤7はウェブ尾縁の巻上げロールへの固着に使用され、他方の接着剤8はウェブ先端部の巻芯74への接着に使用される。すなわち図6～8と同じ要領で接着剤

7、8をウェブ1に転写し、該ウェブ1が溝11の両側に配置されたとき、ウェブ分離器31の先端部を溝11内に押し込むと、ウェブ1は引き裂かれて該ウェブ1は2つに分離され、このとき図10に示すように、接着剤7はウェブ尾縁1aに塗布され、接着剤8はウェブ先端部1bに塗布されることになる。そして、接着剤7によってウェブ尾縁1aは巻上りロールに固着され、接着剤8によってウェブ先端部1bは巻芯74に接着される。したがって、この場合は、ウェブ先端部1bの巻芯74への接着だけでなく、巻上りロールの尾縁1aもロール本体に固定することができる。

【0025】以上のように、本実施例のウェブ巻取り装置では、ウェブ1の走行方向と直角方向のウェブ全幅にわたって接着剤7、8を塗布でき、不必要な接着剤を減少することができ、しかもウェブ1の変色や皺の発生が少くなり、巻取ロールを最初から最後まで使用できるので経済的である。さらに、ウェブ尾縁1aの巻取りロールへの固着も幅方向全域で完全に接着できるため、巻取りロールの尾縁の両端が接着不良にならず幅広のロールであっても取扱いが便利となる。

【0026】

【発明の効果】本発明では、必要最小限の接着剤のみを塗布することができるため、接着剤の使用量を減少することができるとともに、皺がなく巻取りロールの最初から最後まで連続して巻取り使用することができるので経済的である。また、ウェブ尾縁の巻取りロールへの固着が幅方向全域で完全に接着できるため、巻取りロールの尾縁の両端が接着不良にならず幅広のロールであっても取扱いが便利となる。

30 【図面の簡単な説明】

【図1】本発明の一実施例にかかわるウェブ巻取り装置の概略を示した側面図である。

【図2】（A）は接着剤転写ロールまわりの平面図であり、（B）は接着剤転写ロール本体の断面図である。

【図3】本発明のウェブ巻取り装置で用いる制御装置の概略を示した平面図である。

【図4】図1に示されたウェブ巻取り装置の要部拡大図である。

40 【図5】接着剤転写ロールに接着剤を1列塗布した状態の説明図である。

【図6】接着剤を接着剤転写ロールからウェブに転写する状態の説明図である。

【図7】接着剤を転写塗布したウェブをウェブ分離器で切断する状態の説明図である。

【図8】接着剤を1列塗布したウェブの巻取り状態の説明図である。

【図9】接着剤転写ロールに接着剤を2列塗布した状態の説明図である。

50 【図10】接着剤を2列塗布したウェブの巻取り状態の説明図である。

【符号の説明】

1 ウェブ
1b ウェブ先端部
8 接着剤
ドラム
11 溝
ドラム
30 ウェブ分離ロール

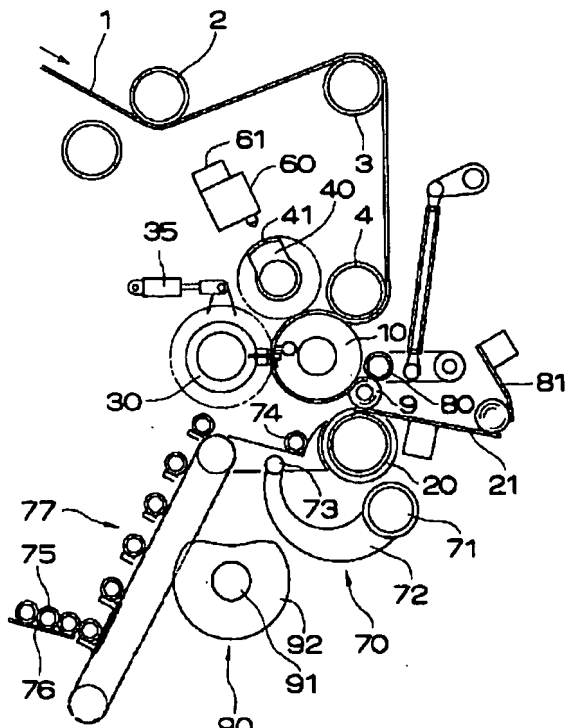
1a ウェブ尾縁
7 接着剤
10 第1巻取り
20 第2巻取り
31 ウェブ分離

器

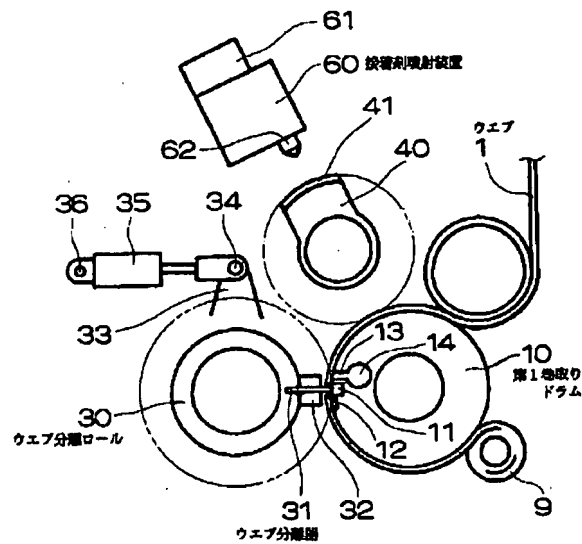
40 接着剤転写ロール
60 接着剤噴射装置
63 ノズル
段
74 巻芯
ール

50 シリンダ
62 ノズル
70 巻芯挿入手
80 直径制御口

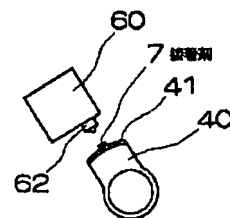
【図1】



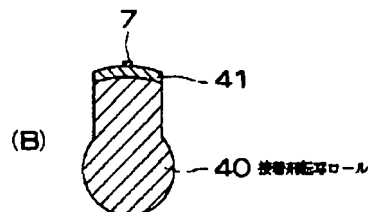
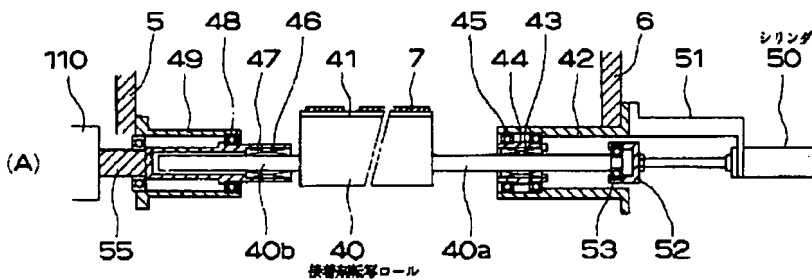
【図4】



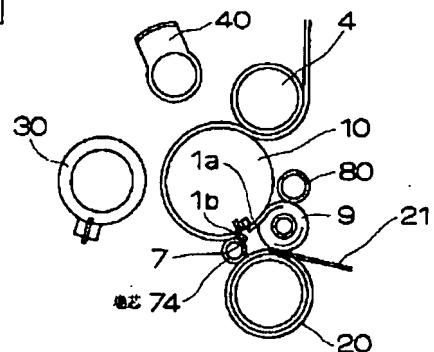
【図5】



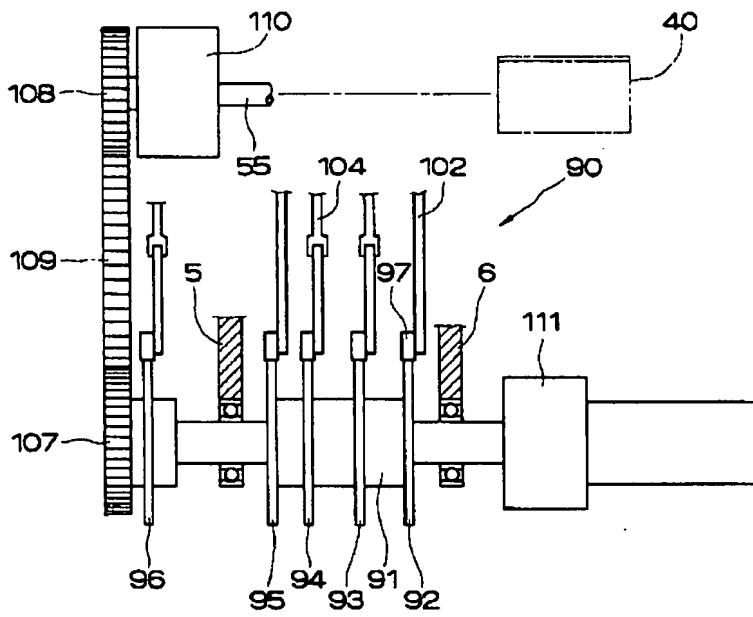
【図2】



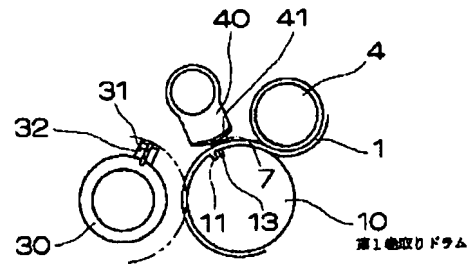
【図8】



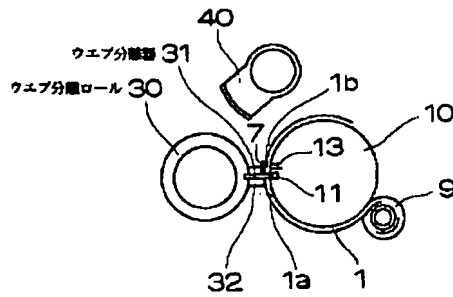
【図3】



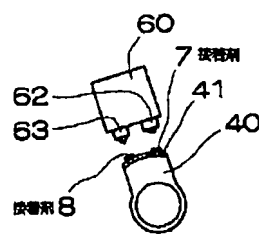
【図6】



【図7】



【図9】



【図10】

